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OCT 30 1996

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OFFICE OF SECRETARY

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DOCKET FILE COPY ORIGINAL

October 30, 1996

J. THOMAS NOLAN
ASSOCIATE

WRITER'S DIRECT DIAL NUMBER

(202) 637-9133

VIA HAND DELIVERY

Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Ex Parte

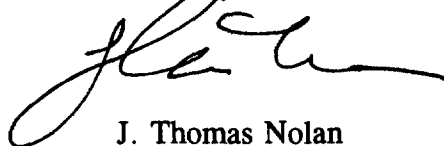
Re: Universal Service, Docket No. 96-45

Dear Mr. Caton:

On October 30, 1996, copies of the enclosed presentation were sent to each of the Joint Board members in the above-referenced proceeding.

Pursuant to Section 1.1206 of the Commission's rules, two copies of the presentation are herewith submitted for filing.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

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October 29, 1996

J. THOMAS NOLAN
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(202) 637-9133

VIA FEDERAL EXPRESS

Mr. Ken McClure
State Chair
Missouri Public Service Commission
301 W. High
Jefferson City, MO 65101

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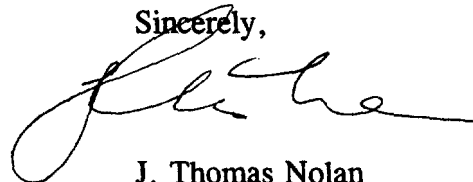
Re: Universal Service, Docket No. 96-45

Dear Mr. McClure:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 29, 1996

J. THOMAS NOLAN
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(202) 637-9133

VIA FEDERAL EXPRESS

Ms. Sharon Nelson
Chairman
Washington Utilities &
Transportation Commission
1300 South Evergreen Park Drive
Olympia, WA 98504

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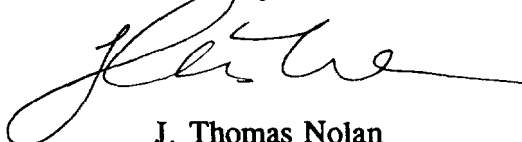
Re: Universal Service, Docket No. 96-45

Dear Ms. Nelson:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 29, 1996

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(202) 637-9133

VIA FEDERAL EXPRESS

Ms. Julia Johnson
Commissioner
Florida Public Service Commission
2340 Shumard Oak Boulevard
Gerald Gunter Building
Tallahassee, FL 32399-0850

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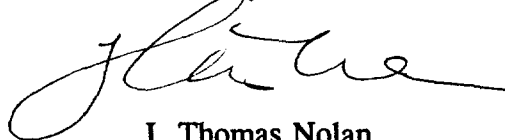
Re: Universal Service, Docket No. 96-45

Dear Ms. Johnson:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 29, 1996

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VIA FEDERAL EXPRESS

Ms. Martha Hogerty
Public Counsel
Missouri Office of Public Council
Harry S. Truman Building
301 West High Street
Jefferson City, MO 65101

Ex Parte

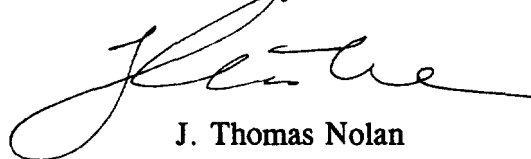
Re: Universal Service, Docket No. 96-45

Dear Ms. Hogerty:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 29, 1996

J. THOMAS NOLAN
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VIA FEDERAL EXPRESS

Mr. Laska Schoenfelder
Commissioner
South Dakota Public Utilities
Commission
State Capitol, 500 East Capitol St.
Pierre, SD 57501-5070

Ex Parte

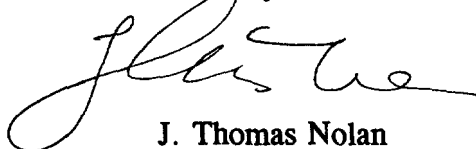
Re: Universal Service, Docket No. 96-45

Dear Mr. Schoenfelder:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 30, 1996

J. THOMAS NOLAN
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VIA FEDERAL EXPRESS

Commissioner Rachelle B. Chong
Federal Communications Commission
Room 844
1919 M Street, N.W.
Washington, D.C. 20554

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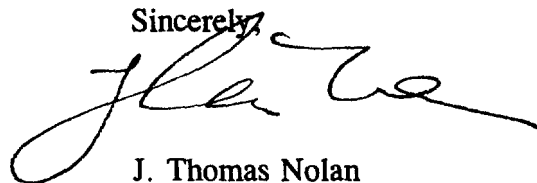
Re: Universal Service, Docket No. 96-45

Dear Commissioner Chong:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 30, 1996

J. THOMAS NOLAN
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(202) 637-9133

VIA FEDERAL EXPRESS

Commissioner Susan Ness
Federal Communications Commission
Room 832
1919 M Street, N.W.
Washington, D.C. 20554

Ex Parte

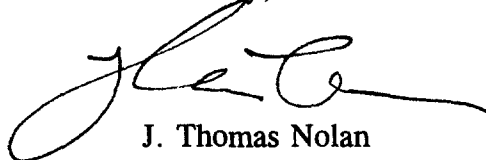
Re: Universal Service, Docket No. 96-45

Dear Commissioner Ness:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely,



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

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October 30, 1996

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VIA FEDERAL EXPRESS

Chairman Reed E. Hundt
Federal Communications Commission
Room 814
1919 M Street, N.W.
Washington, D.C. 20554

Ex Parte

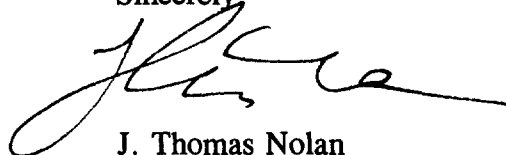
Re: Universal Service, Docket No. 96-45

Dear Chairman Hundt:

On behalf of Metricom, Inc. we have prepared the attached paper describing the benefits that wireless technology can bring to Universal Service. We urge you to consider wireless technology in your recommendation to the FCC.

In accordance with the FCC's rules, a copy of this letter and attachment are being filed with the Secretary to be incorporated in the record of the above-referenced proceeding.

Sincerely



J. Thomas Nolan

JTN:cn
Enclosure

cc: Mr. William F. Caton, Secretary
Federal Communications Commission

Metricom, Inc.
Presentation to Joint Board Members
October 30, 1996

I. Metricom and Ricochet Overview

Metricom is a young, rapidly expanding, technologically innovative company based in Silicon Valley. Metricom is a pioneer in the development of state-of-the-art, spread spectrum, unlicensed data communications systems operating under Part 15 of the FCC's Rules and Regulations. Metricom's frequency hopping, spread spectrum systems -- at the leading edge of technology -- offer a unique, license-free wireless solution providing cost-effective, intelligent and flexible local and wide area (regional) data communications for a variety of important applications in the public interest. Metricom urges the Joint Board to recommend to the FCC that carriers providing wireless communications services be among those carriers eligible to receive reimbursement through the universal service support mechanisms for services provided at a discount to requesting elementary schools, secondary schools, and libraries.

Metricom's Ricochet service is a communications service that provides local-area and wide-area connectivity, including Internet access, using Metricom's wireless packet modem technology. A Ricochet subscriber connects a small radio modem about the size of a TV remote control to the serial port of a personal computer. Using off-the-shelf software such as Netscape, which is provided with the modem, the subscriber has unlimited access to the global Internet (including the World Wide Web), gateways to popular on-line services such as AOL and CompuServe, and connections to other Ricochet subscribers and gateways, all at *user data rates* up to 28.8 kilobits per second. Additional Ricochet options include Internet e-mail accounts, fax service, and remote telephone dial-out capability.

Metricom's microcellular architecture frees Ricochet subscribers from the constraints of wired access. The subscriber's modem communicates with nearby pole-top units, which in turn relay the subscriber's information to one of many wired access points and into Metricom's high-speed wired data network. The subscriber can move from place to place and connect to the Internet at any time, without occupying a telephone line or paying any telephone charges.

Ricochet service is available commercially in the San Francisco Bay and Seattle areas and will be available soon in Washington, D.C. A number of colleges and universities across the country presently use Ricochet service.^{1/} Approximately 275 modems are in use in K-12 schools in the San Francisco Bay Area too, primarily to access the Internet (including the World Wide Web) and commercial online services, send and receive e-mail, and interconnect with the schools' wired local area networks. Each modem is able to provide service to multiple classrooms because it can easily be carried from place to place.

II. Wireless Technologies Will Play an Important Role in Universal Service.

The Snowe-Rockefeller Amendment, now Section 254(h)(1)(B) of the Telecommunications Act of 1996, sets forth a framework to ensure that schools and libraries have guaranteed access to information services. It does so by requiring all "telecommunications carriers" to provide access to information services to requesting schools

^{1/} Ricochet networks are installed at Austin College, California Polytechnic University, Oregon State University, San Francisco State University, Stanford University, University of Oregon, University of Miami, University of California at Berkeley, and University of California at Santa Cruz. Installation at George Washington University is partially completed. Ricochet modems give students convenient, portable, wireless access to e-mail, Internet, and local area networks.

and libraries at a discount, the level of which is to be determined by the FCC and the state commissions. Carriers providing such services at a discount are entitled to have their contributions to the universal service funding mechanisms reduced by an amount equal to the discount, or to receive reimbursement through the universal service funding mechanisms.^{2/}

Since Section 254(h), by its terms, applies to any "telecommunications carrier" that provides the types of service to which that section refers, the Joint Board should make clear in its recommendation to the FCC that the term "telecommunications carriers" includes not only those who provide the subject service by wire (such as LECs) but also those, like Metricom, that provide it by wireless means. Under the 1996 Act, a "telecommunications carrier" is defined as "any provider of telecommunication service." In offering Ricochet, Metricom is a provider of telecommunications service, because the Act defines "telecommunications service" as the offering of telecommunications to the public for a fee, and defines "telecommunications" as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received."^{3/} Ricochet is a telecommunications service because it is offered to the public for a fee and meets all three components of the definition of

^{2/} It is important to realize that under Snowe-Rockefeller, unlike the other universal service provisions of the 1996 Act, carriers need not pass an eligibility test, or be declared a carrier of last resort, in order to be eligible for universal service support. Rather, *all* telecommunications carriers providing service to schools and libraries at a discount may be reimbursed through the universal service fund. See 47 U.S.C. § 254(h)(1)(B)(ii) (carriers may, notwithstanding the "eligible telecommunications carrier" restrictions of Section 214(e), receive reimbursement using universal service support mechanisms for services provided under Section 254(h)).

^{3/} 47 U.S.C. § 153(43), (44), (46).

telecommunications. First, it permits the transmission of information of the user's choosing; second, it permits that information to be transmitted between points specified by the user; and finally, the information is transmitted without change in form or content.^{4/}

Not only does the plain language of Section 254(h) apply to wireless telecommunications carriers as well as wireline carriers, there are sound policy reasons for including wireless carriers within the scope of that provision. Wireless technologies are an attractive choice for the education information infrastructure for a number of reasons. First, as many have realized, providing inside wiring -- given the current condition of many older schools -- may be prohibitively expensive, and may not be the best means to achieve the goal

^{4/} It appears that Ricochet service is a commercial mobile radio service (CMRS) as the FCC has defined that term. To be classified as a CMRS, a service must be (1) a mobile service provided for profit; (2) available to the public; and (3) interconnected with the Public Switched Network (PSN). 47 C.F.R. § 20.3(2) (1995); Implementation of Sections 3(n) and 332 of the Communications Act - Regulatory Treatment of Mobile Services, *Second Report and Order*, 9 FCC Rcd 1411 (1994) ("*Second CMRS Order*"). Not surprisingly, the FCC has ruled that unlicensed *transmitters* themselves do not constitute a CMRS. *Second CMRS Order*, 9 FCC Rcd at 1424 (¶7). The agency has not held that a *service* fails to qualify as a CMRS merely because it uses these unlicensed transmitters.

Ricochet service is a for-profit service available to the public and interconnected with the PSN. Ricochet modems will operate while in motion, and hence Ricochet service satisfies the literal definition of a mobile service; however, such a literal reading has been rendered unnecessary by recent FCC actions. The FCC has issued rules permitting certain wireless services to be classified as CMRS, even though the service is offered from fixed locations, and has an ongoing proceeding to permit a broader array of services offered via fixed radio transmitters to meet the definition of a mobile service within the scope of CMRS. Amendment of the Commission's Rules to Permit Flexible Service Offerings in the Commercial Mobile Radio Services, *First Report and Order and Further Notice of Proposed Rule Making*, FCC 96-283 (rel. Aug. 1, 1996). Metricom anticipates an acknowledgement that Ricochet is a CMRS in connection with this proceeding.

of access to advanced telecommunications and information services in individual classrooms.^{5/} Inside wiring may be especially costly in older schools because they may require retrofitting and may contain asbestos.

Second, wireless technologies can be significantly less expensive than wired connections in many institutional settings. For example, one Colorado study showed that providing Internet access to 14 rural school districts through wireless networks could save the schools nearly \$1 million over a 10 year period over the cost of wired access.^{6/}

Third, wireless technologies may mean quicker and simpler deployment of local and wide-area networks than wired connections. Wireless networks are easy to install, implement, and use. Metricom's Ricochet service, for example, offers an all-in-the-box package with Internet access included, and makes initial setup a 30 minute task instead of a major and costly undertaking.

Fourth, wireless technologies can provide flexibly configured, forward-looking networks that can grow with the needs of the educators and the availability of instructional materials. When a wired network is installed, the network bandwidth and the configuration of network workstations and servers is essentially fixed. A wireless network, on the other hand, can expand over time in both bandwidth and in the number of workstations. Initially, installation can be limited to a few workstations which can be moved from place to place as

^{5/} Testimony before the Joint Board has estimated wiring costs at \$5 billion. *Communications Daily*, June 20, 1996.

^{6/} See *Allocation of Spectrum in the 5 GHz Band to Establish a Wireless Component of the National Information Infrastructure, Comments of the National Science Foundation Wireless Field Test for Education Project* at 3 (1996).

needed. Additional workstations can be included at any time; bandwidth improvements can be achieved by upgrading transmission and reception hardware.

Finally, wireless technologies can provide solutions that involve entire communities, not just the schools and libraries. Teachers can work at home using portable wireless modems and gain access to school network facilities. Students with temporary or permanent disabilities who are unable to attend classes can use wireless modems at home or in specially equipped locations to benefit from computer-assisted instruction and to prepare and turn in homework assignments. Using wireless network interconnections, parent-teacher groups and interested members of the community can participate in educational oversight and curriculum development, and may take part in a variety of online discussions of educational and community interest.

III. Conclusion

Among the principles underlying the Administration's recent E-rate proposal is the principle that "[a]ll schools and libraries must have flexibility in procuring needed telecommunications and information services," and that universal service support must be technology-neutral, while giving "[a]ll competitors seeking to serve schools and libraries . . . equitable and non-discriminatory access to the USF."^{2/} This principle is important to Metricom whether or not the Joint Board adopts some form of the Administration's proposal. Metricom urges the Joint Board to recognize the benefits of wireless technology in providing universal service to schools and libraries. The Joint Board should include a specific recommendation to the FCC that wireless service providers -- both licensed and unlicensed --

^{2/} Further Comments of the NTIA in CC Dkt. No. 96-45, at 7 (Oct. 10, 1996).

be among those carriers eligible for reimbursement from the universal service funding mechanisms for services provided at a discount to schools and libraries.